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Precisely Teaching Street Names and Locations

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The effects of a flash card drill and a say/find street signs intervention were evaluated with a 17-year-old male high school dropout with mild mental retardation. Twenty common street sign names were used. After a three day baseline, flash card drill was implemented. The next phase employed both saying street names and pointing to them on a map of a large urban city visited by the participant. The last phase consisted of two generalization probes to assess the participant's skills at reading a map and driving his vehicle to the correct street. Precision Teaching techniques were used to count, record, chart, and make instructional decisions about see/say street names. Results revealed a significant increase in the frequency of see/say as well as say/point correct street names, and a significant decrease in errors between baseline and the first intervention was noted. Important instructional implications for the use of these procedures are outlined.

Flash cards are often used to teach basic skills to students (Van Houten & Rolider, 1989). Flash cards have been successfully employed to teach letter names and sounds (Young, Hecimovic, & Salzberg, 1983), multiplication facts (Maheady & Sainato, 1985; Van Houten & Roiter, 1989), sight words (Drago & McLaughlin, 1996; Heron, Heward, Cooke, & Hill, 1983), and picture naming (Olenick & Pear, 1980). Since the use of flash cards has been successful in both learning sight works (Heron et al., 1983) and naming objects by person with mental retardation, the present case report examined their use in teaching an adolescent street names and locations on a map. Knowing street signs and being able to find one's location, can be viewed as a prerequisite skill for economic success and independence in our society (Cipani, 1988). Such knowledge and skills should allow a young adult to be more independent, mobile and possibly more employable (Matson, 1988).

The purpose of this study was to evaluate the effectiveness flash cards, corrective feedback, praise, and generalization techniques in the developmental street naming, map reading, and actual driving to a location using Precision Teaching measurement and data-based decision making. The investigation focused on the correct and incorrect frequency of see/say street names, see/say and point to street names on a map, and finally being able to drive to the map location in an automobile. As additional purpose was to test for generalization of skill acquisition (Stokes & Baer, 1977) demonstrated by actual driving to location of the street names.

Method

Participants and Setting

The participant was a 17-year-old male, identified as mildly mentally retarded. The student had qualified for special education services pursuant to the state and federal definition for this disability designation (Washington Administrative Codes for Special Education, 1992) before he dropped out of school two years previously. Assessment results indicated that the participant exhibited large deficits in academic achievement related to written language, was 5.4 years below grade level on the Woodcock-Johnson Tests of Academic Achievement-Revised (Woodcock & Johnson, 1990), and had an overall IQ of 51 on the WISC-R (Wechsler, 1974). However, the participant had a valid Washington State Driver's License, but was unable to read street names and find locations.

The study took place in the participant's home in a rural and remote part of the Northeastern United Stated and in the participant's car while driving on the streets of a large urban city in the Pacific Northwest.

Materials

The curriculum was composed of flash cards with models for each of the street names. A street map of a large metropolitan city located 90 miles from the experimenter's residence was also used. The sessions lasted a total of 20 minutes, three to four times a week.

Measurement Procedures

Precision Teaching measurement procedures were used throughout the study. Baseline and First Intervention were see/say street names. In the third phase, a say and point to the street name on a city map was added. During generalization probes, the participant had to drive to the street location on the map. Even though the participant had to engage in more than one movement cycle in the third and fourth phases, the total movement cycle was scored as either correct or an error. The participant's last timing was recorded on the Standard Celeration Chart. The intermediate instructional aim was 20 correct responses based upon the evaluation criterion with no learning opportunities (i.e., errors) during the trials. This instructional aim was a modified version of the performance standards developed during the Seattle-Tacoma-Spokane (i.e., SST Project) Child Service Demonstration Project (Intermediate School District No. III, 1974) and the Precision Teaching Classroom Learning Screening Instrument (Koenig & Kunzelmann, 1977). In addition, the participant's tool rate was determined, as well as a comparison rate that was determined by the first author's performance on the task.

Design Elements and Experimental Conditions

An ABCA single case replication design (Kazdin, 1982) was used to evaluate the effects of flash card drill and corrective feedback on see/say, see/say/point, and drive in a car to street names.

Baseline. During baseline conditions the first author simply presented 20 flash cards to the participant. Street names needing improvement were selected from the three sessions.

Practice, flashcard drill, and corrective feedback. During this intervention condition, participant was provided with instruction. He was told to "practice his words when the experimenter was not there," and especially to practice the street names that he was having difficulty remembering. Five minutes were allocated to the participant to complete going through his error cards. During these error drills, specific street names were placed in three separate parts of the flash card stack. A two minute time trial followed the error correction, drill, and corrective feedback. This condition was in effect for eight calendar days.

See/say street names and point to street names on map. The same basic conditions and procedures employed in the first intervention were continued, but the participant had to also point to the correct street name on a city map. Traditionally in Precision Teaching, three consecutive days, with the number of corrects below the instructional aim and the minimum rate of progress line and the learning opportunities below 5 per minute, indicates that the participant is making unsatisfactory progress towards mastering the skill (Sweeney, Omness, Janusz, & Cooper, 1992). However, the first author felt that additional time and work on this phase was needed, so she kept the participant on the program longer than recommended. This condition was in effect for 12 calendar days.

Generalization probes (drive car to street locations). On two occasions, the experimenter and her brother drove to the city and evaluated the participant's performance.

Results and Discussion

See/Say Street Names

Improvement in the see/say street names was seen when individual practice, error correction and drill, plus corrective feedback were employed. For corrects, the difference between baseline and the first phase was statistically significant ($U = 0$; $p = .024$). This was also noted for errors ($U = 0$; $p = .024$). The number of corrects found during baseline for see/say street names was low (M=12; range 11 to 13), while the frequency for errors was high in baseline (M=8; range 7 to 9). When independent practice, error correction and drill with flash

cards was implemented, performance improved. The number of corrects increased to 20 with an average of 18, range 16 to 20, while the number of errors declined (M=1.6, range 0 to 4).

See/Say and Point to Street Names on Map

When the participant was in this phase, he not only had to say the street name but also point to the street on a city map. During the first part of this phase, frequency of corrects was low and errors high. However, by the end of this phase, corrects were high and error rate low. For the last two sessions the frequency increased to 19.0 for corrects with only one error.

Generalization Probes

During the last two sessions where the participant drove to the street sign, there were a large number of errors (18) with 2 corrects.

The remediation of a see/say and finally the see/say/point was consistent with previous studies focusing on improving functional skills with Precision Teaching procedures and flash cards. The participant's learning picture appears to show a more inconsistent celeration of corrects across both intervention conditions, when compared to baseline scores. His learning opportunities did show a + learning trend in both the independent practice and drill with flash cards.

Although the student improved both see/say and point skills with street names during this study, he was unable to transfer the skills over to driving in a large urban city. The lack of skill generalization to another response topography (say/point to a drive/find) was disappointing. This change in topography may have been too large. It may be beneficial for future research to continue to probe the participant's driving skills with finding streets and determining his location starting in his rural town, before moving to a large urban city. Another procedure, where the participant Charts were posted (Van Houten, 1980) in the car, could serve to prompt an increase in performance. Training the participant to count, record, and chart his own performance on Standard Charts could improve performance evaluation for both the experimenter and participant.

Future research should continue to examine under what conditions increases in fluency of skills in saying and pointing are related to generalization of these same or similar skills to other settings and behaviors (Howell & Lorson-Howell, 1990). The data in the present analysis were very clear that this was not the case.

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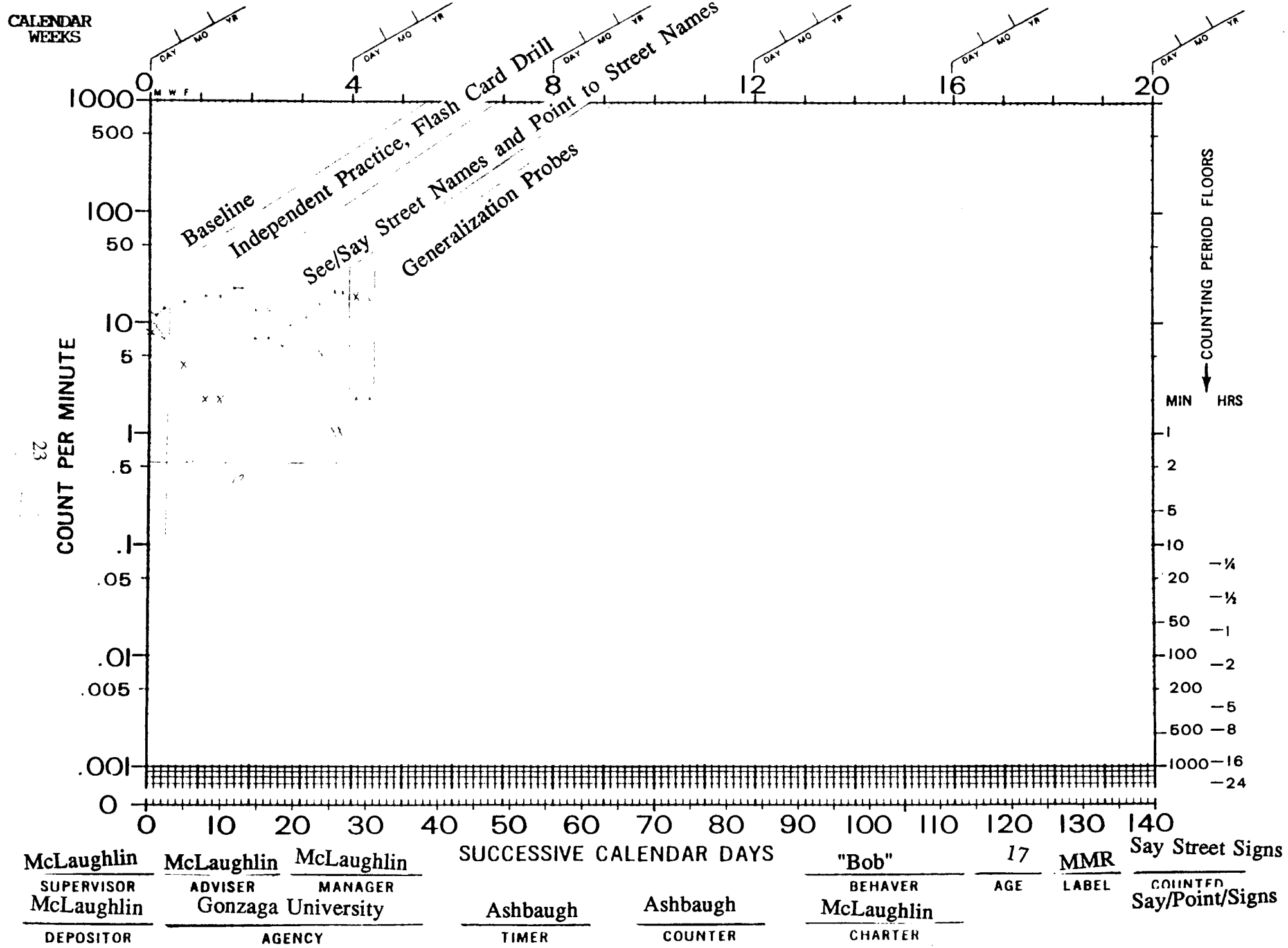
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Baseline
Independent Practice, Flash Card Drill
See/Say Street Names and Point to Street Names
Generalization Probes
COUNT PER MINUTE
COUNTING PERIOD FLOORS
MIN HRS
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2
5
10
20
50
100
200
500
1000
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2
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8
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SUCCESSIVE CALENDAR DAYS
McLaughlin
SUPERVISOR
McLaughlin
ADVISER
McLaughlin
MANAGER
"Bob"
BEHAVER
17
AGE
MMR
LABEL
Say Street Signs
COUNTED
McLaughlin
DEPOSITOR
Gonzaga University
AGENCY
Ashbaugh
TIMER
Ashbaugh
COUNTER
McLaughlin
CHARTER
Say/Point/Signs